WE CLAIM:

1. An apparatus for cutting a product, comprising:

a conveyor assembly that conveys the product in a feed direction and defines a conveyance surface; and

a slitter assembly positioned relative to said conveyor assembly and coupled thereto, to slit the product into strips as the product is conveyed in the feed direction, said slitter assembly comprising a plurality of cutting elements arranged in a V shape, as viewed in a direction substantially normal to the conveyance surface, said cutting elements overlapping one another in the feed direction.

2. The apparatus according to claim 1, wherein an opening end of the V shape is oriented in a leading direction and the pointed end of the V shape is oriented in a trailing direction, such that the product will be fed to the slitter assembly from the open end of the V shape by said conveyor assembly.

3. The apparatus according to claim 1, wherein said conveyor assembly comprises a belt and a belt support frame located beneath said belt, and wherein said cutting elements are mounted above said belt so as to ride against and slightly depress said belt into recesses formed in said belt support frame, thereby ensuring that the product is slit completely through by said cutting elements.

4. The apparatus according to claim 1, wherein each of said plurality of cutting elements comprises a circular blade.

5. The apparatus according to claim 4, wherein said slitter assembly further comprises drive means, for driving said circular blades such that the tangential velocity of the outer periphery of said circular blades is substantially greater than the velocity at which the product is conveyed.

6. The apparatus according to claim 5, wherein said slitter assembly further comprises a peeler foot disposed above the conveyance surface, which biases the product toward the conveyance surface and prevents the product from adhering to, and riding-up, the sides of said circular blades.

7. The apparatus according to claim 4, wherein said slitter assembly further comprises a slitter frame, a slitter arm coupled to said slitter frame, a leading slitter shaft and a trailing slitter shaft both rotatably supported by said slitter frame, and at least one intermediate slitter shaft rotatably supported by said slitter arm, wherein each of said slitter shafts extends transversely to the feed direction, and wherein at least one of said circular blades is rotatably supported on each of said slitter shafts.

8. The apparatus according to claim 7, wherein said slitter arm is pivotable relative to said slitter frame to raise said at least one intermediate slitter shaft and said at least one circular blade supported thereon vertically out of contact with the product, thereby allowing for selective adjustment of the width of the strips of product during operation of the apparatus.

9. The apparatus according to claim 8, wherein said leading and trailing slitter shafts are fixed against vertical movement.

10. The apparatus according to claim 9, wherein said at least one intermediate slitter shaft comprises a pair of intermediate slitter shafts.

11. The apparatus according to claim 9, wherein said at least one intermediate slitter shaft comprises a trio of intermediate slitter shafts.

12. The apparatus according to claim 4, wherein said plurality of circular blades comprises a first pair of coaxial circular blades spaced apart in a direction transverse to the feed direction by a first distance, and a second pair of coaxial circular blades spaced in the direction transverse to the feed direction by a second distance, which is less than the first distance, and offset in the feed direction from said first pair of circular blades.

13. The apparatus according to claim 12, wherein said plurality of circular blades further comprises a third pair of coaxial circular blades spaced apart in the direction transverse to the feed direction by a third distance, which is less than the second distance, and offset in the feed direction from said second pair of circular blades.

14. The apparatus according to claim 13, wherein said plurality of circular blades further comprises a fourth pair of coaxial circular blades spaced apart in the direction transverse to the feed direction by a fourth distance, which is less than the third distance, and offset in the feed direction from said third pair of circular blades.

15. The apparatus according to claim 14, wherein said plurality of circular blades further comprises a central circular blade positioned such that a plane defined by said central circular blade intersects the midpoint of the first, second, third, and fourth distances, and is offset in the feed direction from said fourth pair of circular blades.

16. The apparatus according to claim 1, further comprising a chopping assembly positioned downstream of said slitter assembly to sever the strips of product substantially transversely to the feed direction.

17. The apparatus according to claim 16, wherein said chopping assembly comprises an elongated blade positioned above said conveyance surface substantially transverse to the feed direction, said elongated blade being movable in an elliptical cutting motion about an axis substantially parallel to the length of said elongated blade, such that the elongated blade has a component in the downward direction to sever the strips of product, and a component in the feed direction to push the severed pieces of product in the feed direction.

18. The apparatus according to claim 17, wherein said elongated blade is supported at each end by a drive rod, each said drive rod having one end coupled to an elliptical drive wheel and the other end slidably received in a rod support, which is fixed relative to said conveyor assembly.

19. A method of cutting a deformable product having a front end and a remainder, comprising the steps of:

conveying the product in a feed direction along a conveyance surface;

slitting the product into strips using a plurality of cutting elements arranged in a V shape, as viewed from above, as the product is conveyed in the feed direction; and

stabilizing the product during said slitting step by laterally containing at least a portion of the remainder between one pair of the cutting elements while the front end is being slit by the next successive cutting elements in the feed direction.

20. The method according to claim 19, further comprising the step of peeling the product from the cutting elements by exerting downward pressure on the top surface of the product, to prevent the product from sticking to the cutting elements.

21. The method according to claim 19, further comprising the step of chopping the strips of product substantially transversely to the feed direction using a chopping assembly, so as to sever individual blocks of product from the strips of product.

22. The method according to claim 21, further comprising the step of separating the severed individual blocks of product from the strips of unsevered product, by movement of the chopping assembly in the feed direction.

23. The method according to claim 21, wherein, in said chopping step, the chopping assembly is driven at a rate of between about 64 cycles/min and about 240 cycles/min.

24. The method according to claim 19, wherein the cutting elements used in said slitting step comprise circular blades, and wherein said slitting step comprises the step of driving the circular cutting elements such that the tangential velocity of the outer

periphery of each of the cutting elements is substantially greater than the velocity at which the product is conveyed in said conveying step.

25. The method according to claim 24, wherein, in said driving step, the circular blades are driven such that the tangential velocity of the outer periphery of the circular blades is in the range of about 2-3 times the velocity at which the product is conveyed in said conveying step.

26. The method according to claim 19, further comprising the step of raising at least one of the cutting elements out of contact with the product, thereby adjusting the width of the strips of product.

27. The method according to claim 19, wherein, in said conveying step, the product is conveyed at a speed of between about 16 ft/min and about 60 ft/min.

28. The method according to claim 19, wherein the cutting elements are circular blades, and wherein, in said slitting step, the cutting elements are driven at between about 9 rpm and about 69 rpm.

29. The method according to claim 19, wherein the cutting elements are circular blades, and wherein, in said slitting step, the cutting elements are driven at between about 11 rpm and about 57 rpm.

30. The method according to claim 19, wherein the product being cut is a food product.

31. The method according to claim 30, wherein the product being cut is cheese.

32. A method of cutting a deformable product having a leading end and a trailing end, comprising the steps of:

conveying an elongated piece of the product in a feed direction along a conveyance surface;

slitting the product into strips using a plurality of cutting elements arranged in a V shape, as viewed from above, said slitting operation comprising:

a first slitting step comprising slitting the piece of the product into a plurality of longitudinal strips using a first pair of axially aligned cutting elements; and

a second slitting step comprising slitting at least one of the strips of the product into smaller strips using a second cutting element or a pair of axially aligned cutting elements,

wherein the leading end of the product is brought into contact with the second cutting element or pair of elements while the trailing end is still passing between the first pair of cutting elements.

33. The method according to claim 32, wherein the slitting step further comprises a third slitting step of slitting at least one of the smaller strips of the product into still smaller strips using another cutting element or pair of cutting elements, while the piece of product is still in contact with both the first and second pairs of cutting elements.